

cylindrical nozzle bore member. The ease of the operation of the electronic pin will also allow for quicker reaction times to an overflow condition that might occur in the nozzle of the cylindrical bore member. Furthermore, the use of the electronically controlled actuating rod will allow for a closed pin while injecting resin and an open large end to pass fluid when cleaning of the nozzle is necessary.

It should be noted that the embodiment disclosed above uses an electronic actuator to control the movement of the rod thus releasing gas during various stages of the gas assisted plastic injection molding operation. It will allow for various amounts of gas to be released depending on the size of the outlet opening created at the nozzle end by actuated movement of the rod in the chamber. It should be noted that any other type of electronic or mechanical switch that can be electronically controlled by the operator or a computer system may be used in controlling the movement of the rod within the nozzle assembly.

WHAT IS CLAIMED IS:

Sub-1
1. A nozzle for the injection of fluid into a molding chamber comprising:
a hollow passage having a distal end for connecting a pressurized fluid supply to the interior of said chamber; and
a pin extending through said passage and reciprocal between an extended position and a retracted position, said pin having an enlarged distal portion extending beyond the distal end of said passage and substantially blocking said passage when said pin is in its retracted position.

2. The nozzle of claim 1 wherein said passage has a tapered inner diameter at its distal end and said enlarged portion of said pin has a substantially mating tapered contour.

Subca7 3. The nozzle of claim 1 wherein said pin is hydraulically reciprocated.

4. The nozzle of claim 1 wherein said pin is reciprocated by an electromagnetic actuator.

5. The nozzle of claim 1 further comprising means for biasing said pin into said retracted position.

Subb3 6. The nozzle of claim 1 further comprising a ball screw drive for reciprocating said pin.


Subca7 7. A gas assisted injection molding apparatus comprising:
a molding chamber;
a supply of pressurized gas;
a hollow conduit communicating with said gas supply and extending into said chamber;
a pin extending through said conduit and reciprocal between an extended position and a retracted position, said pin having an enlarged distal portion which substantially closes said conduit when said pin is in said retracted position; and
an electronic actuator reciprocating said pin.

8. The apparatus of claim 7, further comprising an electronic controller connected to said electronic actuator for controlling reciprocation of said pin.

9. The apparatus of claim 7, further comprising means for biasing said pin in said retracted position.

10. The nozzle of claim 7 wherein said conduit has a tapered inner diameter at its distal end and said enlarged portion of said pin has a substantially mating tapered contour.

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